

Characterization of Livestock Grazing Management Systems in Semiarid Areas of Central Tanzania

C.D.K Rubanza¹, A.A. Kimaro², M. Mpanda²

¹The University Dodoma, School of Biological Sciences, P.O Box 338, Dodoma, Tanzania

²The World Agroforestry Centre, ICRAF Tanzania Programme, P.O Box 6226, Dar es Salaam, Tanzania

Introduction

Sustainable livestock production in many parts of the world including Tanzania is limited by the high extent of rangeland degradation due to overstocking as well as invasive species. Proper livestock grazing management systems, for instance, through strengthened traditional institutions and enriched tree planting, represent one of the best approaches for enhanced rangeland and livestock productivity. Traditional rangeland management systems, for instance, through *in situ* vegetation conservation systems of the fodder banks for enhanced regeneration among the Maasai ethnic group locally known as *Alalili* (Rubanza 2008; Rubanza *et al.* 2014), and traditionally known as *Ngitili* among the Sukuma ethnic group of north western Tanzania (Rubanza 1999) represent important agro-silvopastoral systems for improved livestock productivity.

These silvopastoral fodder banks ensure fodder availability even in the dry season, and improved livestock productivity and improved livelihood (Rubanza *et al.* 2013). However, information is lacking on sound management systems of the rangeland resource as well as the associated grazing management in Kiteto and Kongwa districts of central Tanzania.

This study was therefore carried out to (1) characterize livestock grazing management systems, and (2) identify institutions and institutional arrangements responsible for enhanced rangeland resource management.



Figure 1. Setting Rangeland Management Priorities among Maasai and Livestock Specialists in Kiteto District, Tanzania.

Methodology

Study area

- The study was carried out in selected rangelands: two semi-arid districts of central Tanzania in Kiteto (4°31' – 6°03' South; 36°15' – 37°25' East), elevation of 1000-1500 m above sea level; and Kongwa district (5°30' – 6°0' South; 36°15' – 36°E), elevation of about 900-1000 m asl. It was carried out in the dry season between August and October 2013. The two districts are inhabited by two pastoralist ethnic groups: Gogo and Maasai.
- Assessment of livestock grazing management systems was carried out in five grazing lands in both Kiteto and Kongwa districts.

Vegetation

Dominant herbage species include *Cenchrus* spp. and *Cynodon* spp. Most rangelands are degraded with *Aristida* spp. being a dominant grass species. *Acacia* spp. and *Brachystegia* spp./ *Combretum* spp. represent the most dominant tree species.

Participatory rapid appraisal of the rangeland resource

Data on rangeland management and livestock grazing management systems, and institutions and institutional arrangements were collected through participatory rapid appraisal (PRA) techniques such as panel discussions among livestock stakeholders, focused group discussion sessions (FGD), key informant interviews, and rangeland resource assessment using transect walk.

Data Analysis

Data were analyzed into simple descriptive statistics using the Statistical Package for Social Scientists (SPSS).



Figure 2. Monitoring of the Rangeland Resources in Kiteto District, Tanzania.

Results and Discussion

Rangeland grazing management systems

Results revealed variability in grazing management systems between the two districts mainly due to the inherent farming systems and land use systems in both wet and dry seasons. Among Kongwa district pastoralists, during the wet season livestock are grazed on fallow land and hilly/ mountainous areas where there is less cropping.

In Kiteto district during the wet season majority of the livestock are grazed on traditional silvopastoral fodder reserves traditionally known as '*Alalili*'. *Alalili* is an indigenous natural resource management system whereby Maasai agropastoral communities set aside portions/ enclosures of vegetation as deferred feeds during wet seasons for livestock grazing during feed scarcity in the dry season. However, two types of *Alalili* are recognized *Alalili* and *Alalili roho*. *Alalili* denotes portions of pastures set aside for adult cattle grazing. *Alalili roho* refers to portions of pastures set aside to be fed to calves. Literally, *Alalili* means forage reserves while *roho* means calves in Maasai language as clarified by Maasai elders' Council of Elkiushbor Village.

Institutions and Institutional Arrangements

The *Alalili* grazing management system is regulated by a wide range of traditional institutions and the associated institutional arrangements. Utilization of *Alalili* feed resources is governed by by-laws enacted traditionally by the respective Maasai traditional councils. The *Alalili* grazing system and its associated grazing management are being inherited from one generation to another. The entire management of the feed resources is governed by the age set. The Maasai Elders' Council, traditionally known as '*Laiguanani*', is the top management responsible for the management of the resources as well as handling of any disputes. The youths are responsible for herding the stock as well as enhancing security of the feed resources.

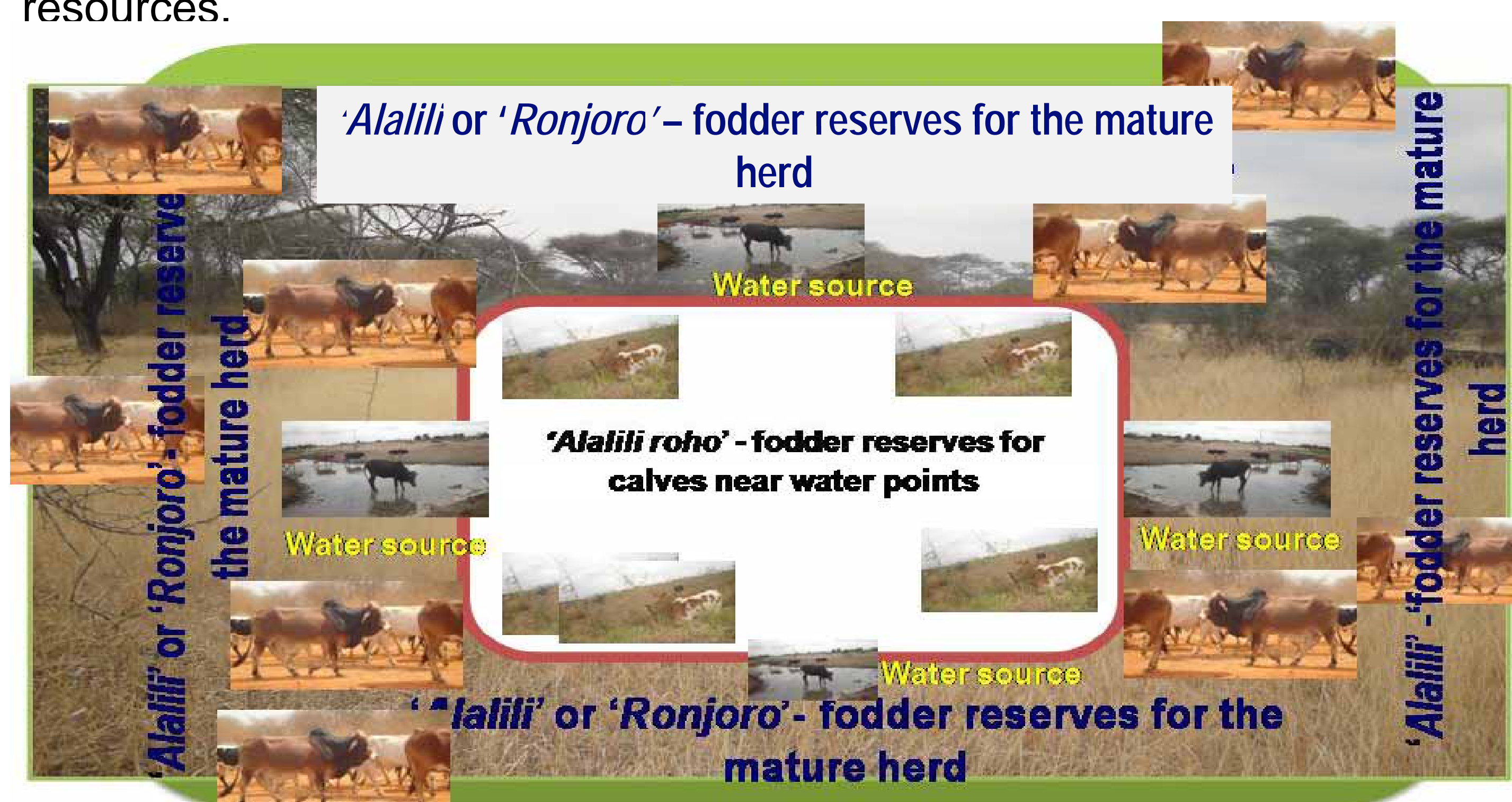


Figure 3. The Maasai traditional grazing arrangement model of calves and older cattle, Kiteto district, Tanzania.

Structural arrangement of both *Alalili* and *Alalili roho* for adult cattle and calves is mainly based on distance from water source with the *Alalili roho*, which is normally smaller, being enclosed with the *Alalili* which is the larger fodder reserve (Fig. 3). The calves grazed in *Alalili roho* are closer to water points with high access to water while the adult herd is normally grazed in distant *Alalili* based on their ability to walk a distance to water points.

Conclusion

Alalili silvopastoral traditional fodder banks represent a strong agroforestry intervention among agropastoral communities for enhanced livestock management. Water resources represent one of the important components of the *Alalili* silvopastoral system.

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